

CLAIMS:

1. A mutant corn plant wherein upon propagation a change in gene activity of a paramutable allele of said mutant plant due to its exposure to a paramutagenic allele is reduced as compared to a wild type plant or wherein the gene activity of a paramutagenic allele of said mutant plant is not maintained as compared to a wild type plant.
2. The mutant corn plant of claim 1 wherein the change in gene activity of a *B-l* allele due to exposure to a *B'* allele is prevented.
3. The mutant corn plant of claim 1 wherein the gene activity of a paramutagenic allele is not maintained
4. The mutant corn plant of claim 1 wherein said mutant corn plant is selected from *Mop1-1* and *Mop 2-1* genotypes.
5. The mutant corn plant of claim 1 wherein the change in gene activity of an *PI-Rh* allele due to its exposure to a *PI'* allele is prevented.
6. The mutant corn plant of claim 1 wherein transcription of an *PI'* allele is increased.
7. The mutant corn plant of claim 1 wherein the change in gene activity of an *R-d* allele due to exposure to an *R'* allele is prevented.
8. A mutant corn plant wherein said mutant corn plant is derived from a wild type corn plant wherein said mutant corn plant comprises one or more mutations wherein said one or more mutations reduce the establishment or maintenance of paramutation in said mutant corn plant as compared to said wild type corn plant wherein said mutant corn plant has *b1*, *r1* and *p1* loci.
9. The mutant corn plant of claim 8 wherein said mutant is reduced in the maintenance of paramutation at the *p1* locus.
10. The mutant corn plant of claim 8 wherein paramutation is not maintained at the *p1* locus.
11. The mutant corn plant of claim 8 wherein said mutant corn plant is selected from the group consisting of *mx1-1*, *mx2-1*, *mon1-1*, *mx1-2*, *mx6-1*, *mx2-1*, *mx11-1*, and *pl-2FMS*.
12. A mutant corn plant of claim 8 wherein said mutant is reduced in the maintenance of paramutation at the *b1* locus.

13. The mutant corn plant of claim 8 wherein paramutation is not maintained at the *b1* locus.
14. The mutant corn plant of claim 13 wherein said mutant corn plant is selected from the group consisting of *rmr2-1*, *mop1-1*, *mop1-2EMS*, *mop3-1*, *Mop2-1* and CC2343.
15. The mutant corn plant of claim 8 wherein said mutant is reduced in the heritable maintenance of paramutation at the *p1* locus.
16. The mutant corn plant of claim 15 wherein said mutant corn plant is selected from *mop1-1* and *Mop2-1* genotypes.
17. A mutant corn plant exhibiting at least two to three fold greater *p1* RNA levels than a corresponding wild type corn plant.
18. Seed from the mutant corn plant of claim 17.
19. Progeny seed produced by crossing the mutant plant of claim 17 with another plant or by self-pollinating the mutant plant of claim 17.
20. A tissue culture of regenerable cells of the mutant plant of claim 17.
21. The mutant corn plant of claim 17 wherein said mutant corn plant is selected from the group consisting of *mop1-2*, *mop1-2*, and *Mop2-1*
22. The mutant corn plant of claim 17 wherein said RNA levels are detected at the *p1* allele wherein said increases in RNA levels are detected using the *PI'* allele.
23. A mutant corn plant exhibiting at least two to three-fold greater *b1* RNA levels than a corresponding wild type corn plant.
24. Seed from the mutant corn plant of claim 23.
25. Progeny seed produced by crossing the mutant plant of claim 23 with another plant or by self-pollinating the mutant plant of claim 23.
26. A tissue culture of regenerable cells of the mutant plant of claim 23.
27. The mutant corn plant of claim 23 wherein said mutant corn plant is selected from the group consisting of *mop1-1*, *Mop2-1*, *mop3-1* and CC2343.
28. The mutant corn plant of claim 23 wherein said RNA levels are detected using the *b1* allele.

attributed to the expression of the transgene in a non-mutant transgenic corn plant

30. Seed from the mutant corn plant of claim 29.
31. Progeny seed produced by crossing the mutant plant of claim 29 and another plant or by self-pollinating the mutant corn plant of claim 29.
32. A tissue culture of regenerable cells of the plant of claim 29.
33. The mutant corn plant of claim 29 wherein the increase in the expression of the transgene is detectable by RNA analysis.
34. The mutant corn plant of claim 29 wherein said mutant corn plant is selected from the group consisting of *mop1-2*, *Mop2-1*, *rmr1-1* and *rmr2-1*.
35. A mutant corn plant comprising a hypomethylated *Mu1* element wherein said *Mu1* element includes an *Hinfl* restriction site wherein said restriction site is completely digested by a 5 fold excess of *Hinfl* restriction enzyme.
36. Seed from the mutant corn plant of claim 35.
37. Progeny seed produced by crossing the mutant plant of claim 35 with another corn plant or by self-pollinating the mutant plant of claim 35.
38. A tissue culture of regenerable cells of the mutant plant of claim 35.
39. Progeny seed produced by crossing the mutant corn plant of claim 35 with another plant or by self-pollinating the mutant corn plant of claim 35.
40. The mutant corn plant of claim 35 wherein said mutant corn plant is selected from the group consisting of *mop1-2* and *mop1-2ems*.
41. A process of producing a transgenic corn plant with an activated transgene, comprising:
- a) crossing a parental transgenic corn plant with a mutant corn plant wherein said parental transgenic plant has a transgene and said mutant plant has one or more mutations wherein said one or more mutations reduce the establishment or maintenance of paramutation in said mutant corn plant as compared to said wild type corn plant to produce a first progeny transgenic plant wherein said silenced transgene is activated in said first progeny transgenic plant and said first progeny transgenic plant is reduced in the establishment or maintenance of paramutation as compared to said wild type plant, and
  - b) outcrossing said first progeny transgenic plant with a wild type corn plant
- establishment or maintenance of paramutation as compared to the wild type plant

42. The method of claim 41 wherein said transgene is silenced in said parental transgenic plant.

43. A transgenic corn plant produced by the process of claim 41.

44. Seed of the transgenic plant of claim 43.

45. An essentially homogeneous population of corn plants produced by growing the seed of claim 44.

46. Progeny seed produced from crossing the plant of claim 43 with another corn plant.

47. Progeny seed produced by self-pollinating the plant of claim 43.

48. A corn plant produced from the seed of claim 44.

49. A tissue culture of regenerable cells of the corn plant of claim 43.

50. The tissue culture of claim 49, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

51. The tissue culture of claim 50, wherein the regenerable cells comprise protoplasts or callus.

52. A corn plant regenerated from the tissue culture of claim 50.

53. The process of claim 41 wherein said mutant plant is selected from the group consisting of *mop1-2* and *rmr2-1*.

54. A progeny corn plant comprising an active transgene wherein said progeny corn plant is derived from a mutant corn plant and a parental corn plant wherein said mutant corn plant is reduced in the establishment or maintenance of paramutation compared to a wild type corn plant.

55. The progeny corn plant of claim 54 wherein said progeny corn plant is not reduced in the establishment or maintenance of paramutation compared to a wild type corn plant.

56. The progeny corn plant of claim 54 wherein said parental corn plant comprises said transgene.

57. The progeny corn plant of claim 56 wherein said transgene is silenced in said progeny corn plant.

58. A tissue culture of regenerable cells of the progeny corn plant of claim 54

60. The tissue culture of claim 59, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

61. Corn seed genotypically designated *rmr1-2* having ATCC Accession Number XX.

62. A corn plant produced from the seed of claim 61.

63. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 61.

64. Pollen or an ovule of the plant of claim 62.

65. A corn plant having the genetic characteristics of the plant of claim 62.

66. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 62.

67. Seed produced from the plant of claim 62.

68. Progeny seed produced from crossing the plant of claim 62 with another corn plant or by self-pollinating the plant of claim 62.

69. A corn plant produced from the seed of claim 68.

70. A corn seed produced from the plant of claim 69.

71. The tissue culture of regenerable cells of corn plant *rmr1-2*, wherein the tissue regenerates plants capable of expressing all the genetical, physiological and morphological characteristics of the corn plant genotypically designated *rmr1-2*, a sample of the seed of said corn plant *rmr1-2* having been deposited under ATCC Accession Number XX.

72. The tissue culture of claim 71, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

73. The tissue culture of claim 72, wherein the regenerable cells comprise protoplasts or callus.

74. A corn plant regenerated from the tissue culture of claim 71, wherein said corn plant is capable of expressing all of the genetical, physiological and morphological characteristics of the corn plant genotypically designated *rmr1-2*, a sample of the seed of said corn plant designated *rmr1-2* having been deposited under ATCC Accession Number XX.

plant, wherein said first or second corn plant is the corn plant *rmr1-2*, a sample of the seed of said corn plant *rmr1-2* having been deposited under ATCC Accession Number XX.

76. The process of claim 75, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and
- (e) harvesting seeds produced on said emasculated corn plant.

77. The process of claim 76, further comprising growing said harvested seed to produce a hybrid corn plant.

78. Hybrid corn seed produced by the process of claim 77.

79. A hybrid corn plant produced by the process of claim 77.

80. The hybrid corn plant of claim 77, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

81. Corn seed designated genotypically designated *rmr2-1* having ATCC Accession Number XX.

82. A corn plant produced from the seed of claim 81.

83. A corn plant having all of the genetical, phenotypic and morphological characteristics of a plant produced from the seed of claim 81.

84. Pollen or an ovule of the plant of claim 82.

85. A corn plant having the genetical characteristics of the plant of claim 82.

86. An essentially homogeneous population of corn plants produced by growing the

88. Progeny seed produced from crossing the plant of claim 82 with another corn plant or by self-pollinating the plant of claim 82.

89. A corn plant produced from the seed of claim 88.

90. A corn seed produced from the plant of claim 89.

91. The tissue culture of regenerable cells of corn plant genotypically designated *rmr2-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *rmr2-1*, a sample of the seed of said corn plant *rmr2-1* having been deposited under ATCC Accession Number XX.

92. The tissue culture of claim 91, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

93. The tissue culture of claim 92, wherein the regenerable cells comprise protoplasts or callus.

94. A corn plant regenerated from the tissue culture of claim 91, wherein said corn plant is capable of expressing all of the genetical, physiological and morphological characteristics of the corn plant designated *rmr2-1*, a sample of the seed of said corn plant designated *rmr2-1* having been deposited under ATCC Accession Number XX.

95. A process of producing corn seed, comprising self-pollinating a plant genotypically designated *rmr2-1* or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *rmr2-1*, a sample of the seed of said corn plant *rmr2-1* having been deposited under ATCC Accession No. XX.

96. The process of claim 95, wherein crossing comprises the steps of:

(a) planting in pollinating proximity seeds of said first and second corn plants;

(b) cultivating the seeds of said first and second corn plants into plants that bear flowers;

(c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;

(d) crossing said first and second corn plants;

(e) harvesting seeds produced on said emasculated corn plant.

97. The process of claim 96, further comprising growing said harvested seed to produce a hybrid corn plant.

98. Hybrid corn seed produced by the process of claim 97.

99. A hybrid corn plant produced by the process of claim 97.

100. The hybrid corn plant of claim 98, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

101. Corn seed genotypically designated *rmr 7-1* having ATCC Accession Number XX.

102. A corn plant produced from the seed of claim 101.

103. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 101.

104. Pollen or an ovule of the plant of claim 102.

105. A corn plant having the genetical characteristics of the plant of claim 102.

106. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 102.

107. Seed produced from the plant of claim 102.

108. Progeny seed produced from crossing the plant of claim 102 with another corn plant or by self-pollinating the plant of claim 102.

109. A corn plant produced from the seed of claim 108.

110. A corn seed produced from the plant of claim 109.

111. The tissue culture of regenerable cells of corn plant genotypically designated *rmr 7-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *rmr 7-1*, a sample of the seed of said corn plant *rmr 7-1* having been deposited under ATCC Accession Number XX.

112. The tissue culture of claim 111, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

113. The tissue culture of claim 112, wherein the regenerable cells comprise

plant is capable of expressing all of the physiological and morphological characteristics of the





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116. The process of claim 115, wherein crossing comprises the steps of:

(a) planting in pollinating proximity seeds of said first and second corn plants;

(b) cultivating the seeds of said first and second corn plants into plants that bear flowers;

(c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;

(d) allowing cross-pollination to occur between said first and second corn plants; and

(e) harvesting seeds produced on said emasculated corn plant.

117. The process of claim 116, further comprising growing said harvested seed to produce a hybrid corn plant.

118. Hybrid corn seed produced by the process of claim 117.

119. A hybrid corn plant produced by the process of claim 117.

120. The hybrid corn plant of claim 119, wherein the plant is a first generation (F<sub>1</sub>) hybrid corn plant.

121. Corn seed genotypically designated *Mop2-1* having ATCC Accession Number XX.

122. A corn plant produced from the seed of claim 121.

123. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 121.

126. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 122.

127. Seed produced from the plant of claim 122.

128. Progeny seed produced from crossing the plant of claim 121 with another corn plant or by self-pollinating the plant of claim 121.

129. A corn plant produced from the seed of claim 128.

130. A corn seed produced from the plant of claim 129.

131. The tissue culture of regenerable cells of corn plant genotypically designated *Mop2-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *Mop2-1*, a sample of the seed of said corn plant *Mop2-1* having been deposited under ATCC Accession Number XX.

132. The tissue culture of claim 131, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

133. The tissue culture of claim 132, wherein the regenerable cells comprise protoplasts or callus.

134. A corn plant regenerated from the tissue culture of claim 131, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *Mop2-1*, a sample of the seed of said corn plant designated *Mop2-1* having been deposited under ATCC Accession Number XX.

135. A process of producing corn seed, comprising self-pollinating a plant genotypically designated *Mop2-1* or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *Mop2-1*, a sample of the seed of said inbred corn plant *Mop2-1* having been deposited under ATCC Accession Number XX.

136. The process of claim 135, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;

(d) allowing cross-pollination to occur between said first and second corn plants; and

(e) harvesting seeds produced on said emasculated corn plant.

137. The process of claim 136, further comprising growing said harvested seed to produce a hybrid corn plant.

138. Hybrid corn seed produced by the process of claim 137.

139. A hybrid corn plant produced by the process of claim 137.

140. The hybrid corn plant of claim 139, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

141. Corn seed designated genotypically designated *rmr* 7-2 having ATCC Accession Number XX.

142. A corn plant produced from the seed of claim 141.

143. A corn plant having all of the genetical, phenotypic and morphological characteristics of a plant produced from the seed of claim 141.

144. Pollen or an ovule of the plant of claim 142.

145. A corn plant having the genetical characteristics of the plant of claim 142.

146. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 142.

147. Seed produced from the plant of claim 142.

148. Progeny seed produced from crossing the plant of claim 142 with another corn plant or by self-pollinating the plant of claim 142.

149. A corn plant produced from the seed of claim 148.

150. A corn seed produced from the plant of claim 149.

151. The tissue culture of regenerable cells of corn plant genotypically designated *rmr* 7-2, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *rmr* 7-2, a sample of the seed of said corn plant *rmr* 7-2 having been deposited under ATCC Accession Number XX.

pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, tassels, husks, stalks

153. The tissue culture of claim 152, wherein the regenerable cells comprise protoplasts or callus.

154. A corn plant regenerated from the tissue culture of claim 151, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *rmr* 7-2, a sample of the seed of said corn plant designated *rmr* 7-2 having been deposited under ATCC Accession Number XX.

155. A process of producing corn seed, comprising self-pollinating a corn plant genotypically designated *rmr* 7-2 or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *rmr* 7-2, a sample of the seed of said inbred corn plant *rmr* 7-2 having been deposited under ATCC Accession Number XX.

156. The process of claim 155, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and
- (e) harvesting seeds produced on said emasculated corn plant.

157. The process of claim 156, further comprising growing said harvested seed to produce a hybrid corn plant.

158. Hybrid corn seed produced by the process of claim 157.

159. A hybrid corn plant produced by the process of claim 157.

160. The hybrid corn plant of claim 159, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

161. Corn seed designated genotypically designated *mop3-1* having ATCC Accession

163. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 161.

164. Pollen or an ovule of the plant of claim 162.

165. A corn plant having the genetical characteristics of the plant of claim 162.

166. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 162.

167. Seed produced from the plant of claim 162.

168. Progeny seed produced from crossing the plant of claim 162 with another corn plant or by self-pollinating the plant of claim 162.

169. A corn plant produced from the seed of claim 168.

170. A corn seed produced from the plant of claim 169.

171. The tissue culture of regenerable cells of corn plant genotypically designated *mop3-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *mop3-1*, a sample of the seed of said corn plant *mop3-1* having been deposited under ATCC Accession Number XX.

172. The tissue culture of claim 171, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

173. The tissue culture of claim 172, wherein the regenerable cells comprise protoplasts or callus.

174. A corn plant regenerated from the tissue culture of claim 171, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *mop3-1*, a sample of the seed of said corn plant designated *mop3-1* having been deposited under ATCC Accession Number XX.

175. A process of producing corn seed, comprising self-pollinating a plant genotypically designated *mop3-1* or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *mop3-1*, a sample of the seed of said inbred corn *mop3-1* having been deposited under ATCC Accession Number XX.

176. The process of claim 175, wherein crossing comprises the steps of:

(b) cultivating the seeds of said first and second corn plants into plants that bear flowers;

(c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;

(d) allowing cross-pollination to occur between said first and second corn plants; and

(e) harvesting seeds produced on said emasculated corn plant.

177. The process of claim 176, further comprising growing said harvested seed to produce a hybrid corn plant.

178. Hybrid corn seed produced by the process of claim 177.

179. A hybrid corn plant produced by the process of claim 177.

180. The hybrid corn plant of claim 177, wherein the plant is a first generation (F<sub>1</sub>) hybrid corn plant.

181. Corn seed designated genotypically designated *Mop1-1* having ATCC Accession Number XX.

182. A corn plant produced from the seed of claim 181.

183. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 181.

184. Pollen or an ovule of the plant of claim 182.

185. A corn plant having the genetical characteristics of the plant of claim 182.

186. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 182.

187. Seed produced from the plant of claim 182.

188. Progeny seed produced from crossing the plant of claim 182 with another corn plant or by self-pollinating the plant of claim 182.

189. A corn plant produced from the seed of claim 188.

*Mop1-1*, wherein the tissue regenerates plants capable of expressing all the physiological and

morphological characteristics of the corn plant *Mop1-1*, a sample of the seed of said corn plant *Mop1-1* having been deposited under ATCC Accession Number XX.

192. The tissue culture of claim 191, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

193. The tissue culture of claim 192, wherein the regenerable cells comprise protoplasts or callus.

194. A corn plant regenerated from the tissue culture of claim 193, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *Mop1-1*, a sample of the seed of said corn plant designated *Mop1-1* having been deposited under ATCC Accession Number XX.

195. A process of producing corn seed, comprising self-pollinating a corn plant genotypically designated *Mop1-1* crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *Mop1-1*, a sample of the seed of said inbred corn plant *Mop1-1* having been deposited under ATCC Accession Number XX.

196. The process of claim 195, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and
- (e) harvesting seeds produced on said emasculated corn plant.

197. The process of claim 196, further comprising growing said harvested seed to produce a hybrid corn plant.

198. Hybrid corn seed produced by the process of claim 197.

200. The hybrid corn plant of claim 199, wherein the plant is a first generation hybrid corn plant.

201. Corn seed designated genotypically designated *Mop1-2EMS* having ATCC Accession Number XX.
202. A corn plant produced from the seed of claim 201.
203. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 201.
204. Pollen or an ovule of the plant of claim 202.
205. A corn plant having the genetical characteristics of the plant of claim 202.
206. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 202.
207. Seed produced from the plant of claim 202.
208. Progeny seed produced from crossing the plant of claim 202 with another corn plant or by self-pollinating the plant of claim 202.
209. A corn plant produced from the seed of claim 208.
210. A corn seed produced from the plant of claim 209.
211. The tissue culture of regenerable cells of corn plant genotypically designated *Mop1-2EMS*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *Mop1-2EMS*, a sample of the seed of said corn plant *Mop1-2EMS* having been deposited under ATCC Accession Number XX.
212. The tissue culture of claim 211, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.
213. The tissue culture of claim 212, wherein the regenerable cells comprise protoplasts or callus.
214. A corn plant regenerated from the tissue culture of claim 211, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *Mop1-2EMS*, a sample of the seed of said corn plant designated *Mop1-2EMS* having been deposited under ATCC Accession Number XX.
215. A process of producing corn seed, comprising self-pollinating a corn plant genotypically designated *Mop1-2EMS* or crossing a first parent corn plant with a second parent
- Number XX.



216. The process of claim 215, wherein crossing comprises the steps of:
- (a) planting in pollinating proximity seeds of said first and second corn plants;
  - (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
  - (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
  - (d) allowing cross-pollination to occur between said first and second corn plants; and
  - (e) harvesting seeds produced on said emasculated corn plant.

217. The process of claim 216, further comprising growing said harvested seed to produce a hybrid corn plant.

218. Hybrid corn seed produced by the process of claim 217.

219. A hybrid corn plant produced by the process of claim 217.

220. The hybrid corn plant of claim 219, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

221. Corn seed designated genotypically designated *mr6-1* having ATCC Accession Number XX.

222. A corn plant produced from the seed of claim 221.

223. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 221.

224. Pollen or an ovule of the plant of claim 222.

225. A corn plant having the genetical characteristics of the plant of claim 222.

226. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 222.

227. Seed produced from the plant of claim 222.

229. A corn plant produced from the seed of claim 228

230. A corn seed produced from the plant of claim 229.

231. The tissue culture of regenerable cells of corn plant genotypically designated *rmr6-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *rmr6-1*, a sample of the seed of said corn plant *rmr6-1* having been deposited under ATCC Accession Number XX.

232. The tissue culture of claim 231, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

233. The tissue culture of claim 232, wherein the regenerable cells comprise protoplasts or callus.

234. A corn plant regenerated from the tissue culture of claim 231, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *rmr6-1*, a sample of the seed of said corn plant designated *rmr6-1* having been deposited under ATCC Accession Number XX.

235. A process of producing corn seed, comprising crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *rmr6-1*, a sample of the seed of said inbred corn plant *rmr6-1* having been deposited under ATCC Accession Number XX.

236. The process of claim 235, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and
- (e) harvesting seeds produced on said emasculated corn plant.

238. Hybrid corn seed produced by the process of claim 237

239. A hybrid corn plant produced by the process of claim 237.
240. The hybrid corn plant of claim 239, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.
241. Corn seed genotypically designated *rmr11-1* having ATCC Accession Number XX.
242. A corn plant produced from the seed of claim 241.
243. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 241.
244. Pollen or an ovule of the plant of claim 242.
245. A corn plant having the genetical characteristics of the plant of claim 242.
246. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 242.
247. Seed produced from the plant of claim 242.
248. Progeny seed produced from crossing the plant of claim 242 with another corn plant or by self-pollinating the plant of claim 242.
249. A corn plant produced from the seed of claim 248.
250. A corn seed produced from the plant of claim 249.
251. The tissue culture of regenerable cells of corn plant genotypically designated *rmr11-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *rmr11-1*, a sample of the seed of said corn plant *rmr11-1* having been deposited under ATCC Accession Number XX.
252. The tissue culture of claim 251, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.
253. The tissue culture of claim 252, wherein the regenerable cells comprise protoplasts or callus.
254. A corn plant regenerated from the tissue culture of claim 251, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant *rmr11-1*, a sample of the seed of said corn plant designated *rmr11-1* having been deposited under ATCC Accession Number XX.
255. A process of producing corn seed, comprising self-pollinating a first parent corn plant genotypically designated *rmr11-1* or crossing a first parent corn plant with a second parent corn

plant, wherein said first or second corn plant is the corn plant *rmr11-1*, a sample of the seed of said inbred corn plant *rmr11-1* having been deposited under ATCC Accession Number XX.

256. The process of claim 255, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and
- (e) harvesting seeds produced on said emasculated corn plant.

257. The process of claim 256, further comprising growing said harvested seed to produce a hybrid corn plant.

258. Hybrid corn seed produced by the process of claim 257.

259. A hybrid corn plant produced by the process of claim 257.

260. The hybrid corn plant of claim 257, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

261. Corn seed genotypically designated *rmr8-1* having ATCC Accession Number XX.

262. A corn plant produced from the seed of claim 261.

263. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 261.

264. Pollen or an ovule of the plant of claim 262.

265. A corn plant having the genetical characteristics of the plant of claim 262.

266. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 262.

plant or by self-pollinating the plant of claim 262.

269. A corn plant produced from the seed of claim 268.

270. A corn seed produced from the plant of claim 269.

271. The tissue culture of regenerable cells of corn plant genotypically designated *rmr8-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *rmr8-1*, a sample of the seed of said corn plant *rmr8-1* having been deposited under ATCC Accession Number XX.

272. The tissue culture of claim 271, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

273. The tissue culture of claim 272, wherein the regenerable cells comprise protoplasts or callus.

274. A corn plant regenerated from the tissue culture of claim 271, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *rmr8-1*, a sample of the seed of said corn plant designated *rmr8-1* having been deposited under ATCC Accession Number XX.

275. A process of producing corn seed, comprising self-pollinating a plant genotypically designated *rmr8-1* or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *rmr8-1*, a sample of the seed of said inbred corn plant *rmr8-1* having been deposited under ATCC Accession Number XX.

276. The process of claim 275, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and

the process of claim 275, wherein crossing comprises the steps of:  
produce a hybrid corn plant.

278. Hybrid corn seed produced by the process of claim 277.
279. A hybrid corn plant produced by the process of claim 277.
280. The hybrid corn plant of claim 279, wherein the plant is a first generation (F<sub>1</sub>) hybrid corn plant.
281. Corn seed genotypically designated *Mop1-4* having ATCC Accession Number XX.
282. A corn plant produced from the seed of claim 281.
283. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 281.
284. Pollen or an ovule of the plant of claim 282.
285. A corn plant having the genetical characteristics of the plant of claim 282.
286. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 282.
287. Seed produced from the plant of claim 282.
288. Progeny seed produced from crossing the plant of claim 282 with another corn plant or by self-pollinating the plant of claim 282.
289. A corn plant produced from the seed of claim 288.
290. A corn seed produced from the plant of claim 289.
291. The tissue culture of regenerable cells of corn plant genotypically designated *Mop1-4*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *Mop1-4*, a sample of the seed of said corn plant *Mop1-4* having been deposited under ATCC Accession Number XX.
292. The tissue culture of claim 291, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.
293. The tissue culture of claim 292, wherein the regenerable cells comprise protoplasts or callus.
294. A corn plant regenerated from the tissue culture of claim 291, wherein said corn

been deposited under ATCC Accession Number XX.

295. A process of producing corn seed, comprising self-pollinating a plant genotypically designated *Mop1-4* or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *Mop1-4*, a sample of the seed of said inbred corn plant *Mop1-4* having been deposited under ATCC Accession Number XX.

296. The process of claim 295, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and
- (e) harvesting seeds produced on said emasculated corn plant.

297. The process of claim 296, further comprising growing said harvested seed to produce a hybrid corn plant.

298. Hybrid corn seed produced by the process of claim 297.

299. A hybrid corn plant produced by the process of claim 297.

300. The hybrid corn plant of claim 299, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

301. Corn seed genotypically designated *Mop1-5* having ATCC Accession Number XX.

302. A corn plant produced from the seed of claim 301.

303. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 301.

304. Pollen or an ovule of the plant of claim 302.

305. A corn plant having the genetical characteristics of the plant of claim 302

and of the corn plant of claim 303.

307. Seed produced from the plant of claim 302.

308. Progeny seed produced from crossing the plant of claim 302 with another corn plant or by self-pollinating the plant of claim 302.

309. A corn plant produced from the seed of claim 308.

310. A corn seed produced from the plant of claim 309.

311. The tissue culture of regenerable cells of corn plant genotypically designated *Mop1-5*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *Mop1-5*, a sample of the seed of said corn plant *Mop1-5* having been deposited under ATCC Accession Number XX.

312. The tissue culture of claim 311, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

313. The tissue culture of claim 312, wherein the regenerable cells comprise protoplasts or callus.

314. A corn plant regenerated from the tissue culture of claim 311, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *Mop1-5*, a sample of the seed of said corn plant designated *Mop1-5* having been deposited under ATCC Accession Number XX.

315. A process of producing corn seed, comprising self-pollinating a plant genotypically designated *Mop1-5* or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *Mop1-5*, a sample of the seed of said inbred corn plant *Mop1-5* having been deposited under ATCC Accession Number XX.

316. The process of claim 315, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (e) harvesting seeds produced on said emasculated corn plant



317. The process of claim 316, further comprising growing said harvested seed to produce a hybrid corn plant.

318. Hybrid corn seed produced by the process of claim 317.

319. A hybrid corn plant produced by the process of claim 317.

320. The hybrid corn plant of claim 319, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

321. Corn seed genotypically designated CC2343 having ATCC Accession Number XX.

322. A corn plant produced from the seed of claim 321.

323. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 321.

324. Pollen or an ovule of the plant of claim 322.

325. A corn plant having the genetical characteristics of the plant of claim 322.

326. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 322.

327. Seed produced from the plant of claim 322.

328. Progeny seed produced from crossing the plant of claim 322 with another corn plant or by self-pollinating the plant of claim 322.

329. A corn plant produced from the seed of claim 328.

330. A corn seed produced from the plant of claim 329.

331. The tissue culture of regenerable cells of corn plant genotypically designated CC2343, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant CC2343, a sample of the seed of said corn plant CC2343 having been deposited under ATCC Accession Number XX.

332. The tissue culture of claim 331, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

333. The tissue culture of claim 332, wherein the regenerable cells comprise

plant is capable of expressing all of the physiological and morphological characteristics of the

corn plant designated CC2343, a sample of the seed of said corn plant designated CC2343 having been deposited under ATCC Accession Number XX.

335. A process of producing corn seed, comprising self-pollinating a plant genotypically designated CC2343 or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant CC2343, a sample of the seed of said inbred corn plant CC2343 having been deposited under ATCC Accession Number XX.

336. The process of claim 335, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and
- (e) harvesting seeds produced on said emasculated corn plant.

337. The process of claim 336, further comprising growing said harvested seed to produce a hybrid corn plant.

338. Hybrid corn seed produced by the process of claim 337.

339. A hybrid corn plant produced by the process of claim 337.

340. The hybrid corn plant of claim 339, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

341. Corn seed genotypically designated *rmr1-1* having ATCC Accession Number XX.

342. A corn plant produced from the seed of claim 341.

343. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 341.

344. Pollen or an ovule of the plant of claim 342.

345. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 342.

347. Seed produced from the plant of claim 342.

348. Progeny seed produced from crossing the plant of claim 342 with another corn plant or by self-pollinating the plant of claim 342.

349. A corn plant produced from the seed of claim 348.

350. A corn seed produced from the plant of claim 349.

351. The tissue culture of regenerable cells of corn plant genotypically designated *rmr1-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *rmr1-1*, a sample of the seed of said corn plant *rmr1-1* having been deposited under ATCC Accession Number XX.

352. The tissue culture of claim 351, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

353. The tissue culture of claim 352, wherein the regenerable cells comprise protoplasts or callus.

354. A corn plant regenerated from the tissue culture of claim 351, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the corn plant designated *rmr1-1*, a sample of the seed of said corn plant designated *rmr1-1* having been deposited under ATCC Accession Number XX.

355. A process of producing corn seed, comprising self-pollinating a plant genotypically designated *rmr1-1* or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *rmr9-1*, a sample of the seed of said inbred corn plant *rmr1-1* having been deposited under ATCC Accession Number XX.

356. The process of claim 355, wherein crossing comprises the steps of:

(a) planting in pollinating proximity seeds of said first and second corn plants;

(b) cultivating the seeds of said first and second corn plants into plants that bear flowers;

(c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;

plants, etc.

(e) harvesting seeds produced on said emasculated corn plant.

357. The process of claim 356, further comprising growing said harvested seed to produce a hybrid corn plant.

358. Hybrid corn seed produced by the process of claim 357.

359. A hybrid corn plant produced by the process of claim 357.

360. The hybrid corn plant of claim 359, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.

361. Corn seed genotypically designated *rmr9-1* having ATCC Accession Number XX.

362. A corn plant produced from the seed of claim 361.

363. A corn plant having all of the phenotypic and morphological characteristics of a plant produced from the seed of claim 361.

364. Pollen or an ovule of the plant of claim 362.

365. A corn plant having the genetical characteristics of the plant of claim 362.

366. An essentially homogeneous population of corn plants produced by growing the seed of the corn plant of claim 362.

367. Seed produced from the plant of claim 362.

368. Progeny seed produced from crossing the plant of claim 362 with another corn plant or by self-pollinating the plant of claim 362.

369. A corn plant produced from the seed of claim 368.

370. A corn seed produced from the plant of claim 369.

371. The tissue culture of regenerable cells of corn plant genotypically designated *rmr9-1*, wherein the tissue regenerates plants capable of expressing all the physiological and morphological characteristics of the corn plant *rmr9-1*, a sample of the seed of said corn plant *rmr9-1* having been deposited under ATCC Accession Number XX.

372. The tissue culture of claim 371, wherein the regenerable cells comprise cells derived from embryos, immature embryos, meristematic cells, immature tassels, microspores, pollen, leaves, anthers, roots, root tips, silk, flowers, kernels, ears, cobs, husks, or stalks.

373. A corn plant regenerated from the tissue culture of claim 371, wherein said corn plant is capable of expressing all of the physiological and morphological characteristics of the

corn plant designated *rmr9-1*, a sample of the seed of said corn plant designated *rmr9-1* having been deposited under ATCC Accession Number XX.

375. A process of producing corn seed, comprising self-pollinating a plant genotypically designated *rmr9-1* or crossing a first parent corn plant with a second parent corn plant, wherein said first or second corn plant is the corn plant *rmr9-1*, a sample of the seed of said inbred corn plant *rmr9-1* having been deposited under ATCC Accession Number XX.

376. The process of claim 375, wherein crossing comprises the steps of:

- (a) planting in pollinating proximity seeds of said first and second corn plants;
- (b) cultivating the seeds of said first and second corn plants into plants that bear flowers;
- (c) emasculating the male flowers of said first or second corn plant to produce an emasculated corn plant;
- (d) allowing cross-pollination to occur between said first and second corn plants; and
- (e) harvesting seeds produced on said emasculated corn plant.

377. The process of claim 376, further comprising growing said harvested seed to produce a hybrid corn plant.

378. Hybrid corn seed produced by the process of claim 377.

379. A hybrid corn plant produced by the process of claim 377.

380. The hybrid corn plant of claim 379, wherein the plant is a first generation ( $F_1$ ) hybrid corn plant.